



Health and Safety Plan (HASP)

Gold King Mine Site Tunnel Rehabilitation and Portal Section Construction

August 13 , 2015



Harrison Western Construction Corporation
Experience | Integrity | Performance
Responsible Natural Resource Development™

1208 Quail Street, Lakewood, Colorado 80215 • (303) 234-0273 • FAX (303) 237-9868

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TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY	3
2.0	CORPORATE INFORMATION	4
3.0	SCOPE OF WORK.....	5
4.0	UNDERGROUND CONSTRUCTION – 29 CFR 1926 SUBPART S	6
5.0	DETAILED ESCAPE AND EVACUATION PLAN.....	11
6.0	TUNNEL AND ROPE RESCUE PLAN.....	13
7.0	SITE SPECIFIC SAFETY CONDITIONS	14
8.0	WATER CONTROL PLAN.....	16
9.0	GENERAL SAFETY MEASURES.....	17
10.0	ENVIRONMENTAL PROTECTION AND CONTROL PLAN.....	19
11.0	HEALTH ISSUES	20
12.0	EMERGENCY CONTACT AND NOTIFICATIONS INFORMATION	21
13.0	APPENDICES:	23
	A. Location Maps	
	B. Gold King – Profile Map	
	C. HWCC & Mine Rescue – Letter of Agreement (To be provided)	
	D. HWCC and Silverton Fire Department – Letter of Agreement	
	E. Fan Curve Chart	
	F. Site Facilities Map	
	G. SDS	

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1.0 EXECUTIVE SUMMARY

Harrison Western Construction Corp (HWCC) proposes to enter the Gold King Mine at the EPA's Superfund Site located near Silverton, CO in order to provide safe access for future work. HWCC will perform drilling, mucking, and ground support installation work approximately up to 100 feet from the portal inside the mine. Outside work includes earthwork, high wall, rock drilling and water management utilizing 60 feet of 10 foot diameter culvert with 12 inch drain lines below. This Health Plan and Safety Plan (HASP) will outline the methods, procedures, and precautions taken to ensure a safe working environment for all personnel associated with this project.

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2.0 CORPORATE INFORMATION

Mine

Gold King Mine

Owner

Environmental Protection Agency – Region 8

1595 Wynkoop Ave

Denver, CO 80202-1120

Location:

Approximately 9.1 Miles North East of Silverton, CO

Approximate Elevation 10,600 ft. above sea level

Contract Administrator:

Environmental Restoration

1666 Fabrick Drive

St. Louis, MO 63026

Phone: 636-227-7477

Contractor Performing Work:

Harrison Western Construction Corp

1208 Quail St

Lakewood, CO 80215

(303) 234-0273

(303) 237-9868

MSHA ID # J35

Onsite Satellite Phone Number: (Number to be determined)

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3.0 SCOPE OF WORK

The work will consist of the following tasks:

- Mobilize equipment and personnel to site
- Provide all personnel with site specific training
- Establish communications
- Establish required utilities and set up equipment required to perform work
- Site Preparation and Temporary Facilities to include, staging/stockpile/borrow areas, erosion, and dewatering
- Begin excavation of the high wall and hang wire mesh.
- Install rock bolts
- Make investigation evaluation of current adit condition
- Install and Seal Culverts access with drains
- Install locking double adit door closures.
- Continue advance into tunnel, improving or reestablishing ground control as needed_and as requested.
- Gradually lower debris blockage as underground water is removed.
- Remove earthen debris and buried timbers, piping, etc...
- Remove equipment from the inside portal area.
- Site restoration and seeding
- Demobilize from site

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4.0 UNDERGROUND CONSTRUCTION – 29 CFR 1926 SUBPART S

1926.800 *Scope and Application*

Rehabilitation work at the Gold King Mine – Silverton, CO

1926.8 (b) *Access and Egress*

- (1) Access and egress will be maintained so that there will be safe access to all work areas .
- (2) During mucking operations the adit will not have employees on the ground inside the adit.
- (3) All unused openings will be safety guarded as they are encountered.

1926.800 (c) *Check-in/Check-out*

There will be a check-in/check-out brass board at the portal entry for underground work.

1926.800 (d) *Safety Instruction*

Before underground work begins the following subjects will be covered with the crews for the Standard Mine Rehabilitation:

1. Air monitoring
2. Ventilation
3. Illumination
4. Communications
5. Flood control
6. Mechanical equipment
7. Personal protective equipment
8. Electrical Safety
9. Fire prevention and protection; and
10. Emergency procedures, including evacuation plans and check-in/check-out systems
11. LOTO Procedures
12. Task Training for all tasks (Equipment and work tasks by a competent persons
13. Health (Dust, Noise, DPM (Diesel Particulate Matter) , and heavy metal contamination precautions.

1926.800 (e) *Notification*

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- (1) During shift changes any change in conditions will be relayed to the oncoming crews.
- (2) Communications between tunnel crews and outside work crews will be maintained through the use of two -way radios, to ensure there is no safety conflict between the separate workings and the outside construction activities.

1926.800 (f) *Communications*

- (1)-(5) Communication inside the tunnel will be achieved through the use of two way radios.

1926.800 (g) *Emergency provisions*

- (1) Hoisting will not be used..
- (2) All employees that go into the portal tunnel will be supplied with a W65 MSA self-rescuer
- (3) At least one designated employee will be on duty on surface while any employee is working underground.
- (4) Each employee will have a portable hand or cap lamp in their work area, unless natural lighting is sufficient.
- (5) There will be a maximum of 16 employees on site. Mine rescue team will consist of employees that are onsite at the time of an incident. The mine rescue team will be supplemented by the Silverton Fire Department and Mine Rescue.

1926.800 (h) *Potentially gassy operations*

- (1)-(3) There is no history of this mine being a gassy mine. However there will be atmospheric air monitors used on site to detect hazardous gasses and appropriate air monitoring will be conducted routinely

1926.800 (i) *Gassy operations-additional requirements*

- (1)-(6) There is no history of this mine being a gassy mine. However, if conditions/symptoms change work will be stopped all effected workers removed and the area will be reassessed.

1926.800 (j) *Air quality and monitoring*

A competent person will be assigned to perform air monitoring. If air quality is not acceptable work will be stopped until corrective action is taken. When the oxygen, content is at or below acceptable levels ($O_2 > 19.5$ or combustible concentrations are greater than

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10% LEL, workers in that area must immediately go to fresh air and management shall reestablish acceptable atmospheric conditions before work in that area resumes.

1926.800 (k) *Ventilation*

- (1)-(5) One ventilation fan will be used if necessary to assure adequate ventilation.
- (6) There are no known ventilation doors in the Gold King Mine tunnel.
- (7)-(8) Whenever ventilation is stopped or reduced a competent person will complete air testing and allow work to resume once ventilation has been reestablished or conditions indicate safe entry.
- (9) While drilling appropriate measures will be taken to maintain a low dust environment.
- (10) Only diesel powered engines on mobile equipment will be allowed underground.
- (11)-(13) The mine has no history of being a gassy mine. If conditions change work will be reevaluated.

1926.800 (l) *Illumination*

- (1)-(2) Adequate and acceptable lighting will be installed where cap lamps are not adequate.

1926.8 (m) *Fire prevention and control*

- (1) No open flames will be allowed underground except as permitted for hot work operations, i.e. welding, cutting etc.
- (2) No smoking will be tolerated around flammable hazards
- (3) Diesel fuel will not be stored within the portal tunnel.
- (4) There will not be and fuel transferred within the tunnel portal.
- (5) There will be no gasoline carried, or transferred within the portal tunnel.
- (6) Oil, grease and diesel fuel will only be stored in appropriate containers and areas.
- (7) Flammable or combustible materials will be stored in appropriate containers and/or flammable cabinets as necessary
- (8) All equipment will have 10 pound type ABC fire extinguishers
- (9) Electrical installations in underground areas will only be for lighting in areas designated for fuel, oil, or grease.
- (10) All spills will be cleaned up immediately and disposed of in accordance with environmental regulations.
- (11) There will be no conveyors on site.
- (12) Structures will be located no closer than 100 feet of a portal or located underground.

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1926.800 (n) *Welding, cutting, and other hot work*

- (1) Only the amount of fuel gas and oxygen cylinders necessary to perform welding, cutting, or other hot work for a 24 hours period will be stored underground and will be appropriately placed and secured.
- (2) Proper hot work procedure will be followed at all times, by training employees.

1926.800 (o) *Ground Support*

- (1)-(4) A competent person will be in charge of determining all ground support types, and conditions. All employees will be trained in ground support measures and the tunnel will be inspected as needed to prevent rock falls.

1926.8 (p) *Blasting*

- (1) Blasting wires will be kept clear of electrical lines, pipes, rails, and other conductive material to prevent unintentional explosions.

1926.800 (q) *Drilling*

- (1) Equipment will be inspected daily, with any defects being noted. Equipment will be taken out of service if the condition affects worker safety.
- (2) All drilling areas will have ground control inspected before drilling operations can begin.
- (3) Employees will not be allowed on a drill mast while drilling is in operation.
- (4) -While moving machinery mast and other equipment will be in a safe/secured position.
- (5)-(8) No drill jumbos will be onsite.
- (9) Scaling bars will be used at areas where scaling operations likely to occur.
- (10) Drill holes will not be drilled through muck, or water.
- (11) Where buried lines are located, Proper signage will be placed

1926.800 (r) *Haulage*

Pre-shift inspections will be required for all equipment and applicable haul road areas.

1926.800 (s) *Electrical safety*

- (1) Electric lines will be placed so that in the event of a damaged circuit other systems will not be affected.
- (2) Lighting circuits will be placed proper for the intended use and out of equipment and personnel pathways.

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1926.800 (t) *Hoisting unique to underground construction*

There will be no hoisting on the project.

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5.0 DETAILED ESCAPE AND EVACUATION PLAN

Miners shall be notified of an emergency situation by communicating over two way radios, or by sounding an air horn into the fresh air stream. Upon notification of an emergency, all work will be stopped. Miners will walk out of the tunnel via the primary escape route. Miners will remain at designated meeting site until a roster is taken and compared to the brass board. They will then contact the superintendent/competent person for further instruction. There will be an evacuation drill to ensure proper procedure is followed.

If an unplanned fire is discovered, it will be extinguished (if safe to do so) with multi-purpose hand held fire extinguishers. Appropriate notifications of the event will be made, including General Contractor, EPA Region 8, mine rescue (if required) or other. In the event the fire cannot be extinguished, the tunnel will be evacuated and General Contractor, EPA, Forest Service, Silverton Fire Department and Mine Rescue Team personnel will be notified of the situation.

Notifications of events including safety, injury, fire or other reason for evacuation or potential safety hazards discovered shall be reported to the Project Manager or his alternate immediately. If required, notifications to OSHA will also be made aware per the requirements of 29 CFR 1910 or 1926 (OSHA requires medically treated injuries be reported within eight (8) hours from the time the injury is determined).

Silverton Fire Department has the landing point coordinates and can mobilize a helicopter rescue if deemed necessary. (will be provided)

There is limited cell phone reception at the primary laydown area and no cell phone reception at the mine location. Emergency contact numbers are as follows:

Primary Emergency Call Out Number From Satellite Phone: (to be provided)

Silverton Fire Department Dispatch Number: **970-387-5023**

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Primary Emergency Call Out Number From Cell Phone or Land Line: **911**

Emergency Landing Coordinates are:

Primary Lay Down Area Helicopter Landing Point: 37.894475 -107.638416

37° 53' 49.1" N

107° 38' 13" W

Mine Rehabilitation Helicopter Landing Point:

(To be determined)



Mine Rescue Contacts

(To be determined)

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6.0 TUNNEL AND ROPE RESCUE PLAN

In the event of an underground emergency Colorado Front Range Mine Rescue will be notified. HWCC personnel assisted by the Silverton Fire Department will begin surface arrangements for a mine rescue. Rescue operations will begin once safe entry has been established for the rescue team. Communications to offsite rescue teams will be made with a satellite phone.

Rope Rescue

Safety belts and lines shall be worn when persons work where there is danger of falling: a second person shall tend the life line when bins, tanks or other dangerous areas are entered.

HWCC personnel will ensure that proper anchors for work and rescue are in place before work is performed in fall risk areas. Equipment list that will be onsite to facilitate rope rescues:

- Rescue harness
- Rope Ascender/Descender
- Rescue Pulley System

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7.0 SITE SPECIFIC SAFETY CONDITIONS

The mine location is at a relatively high elevation (approximately 10,600 feet) due to this elevation all employees and visitors will be made aware the potential risk of acute mountain sickness (AMS) and high altitude pulmonary edema (HAPE).

AMS is commonly known as altitude sickness, commonly occurring at elevations in excess of 8,000 feet. AMS usually occurs following a rapid ascent, and can be mitigated by slowing ascent rate. The symptoms are usually temporary, but there have been rare cases where a fatality was recorded.

Primary symptoms include:

- Headaches
- Lack of appetite, nausea, or vomiting
- Fatigue or weakness
- Dizziness or lightheadedness
- Peripheral edema (swelling of hands, feet, or face)
- Insomnia
- Pins and needles
- Shortness of breath upon exertion
- Nosebleed
- Persistent rapid pulse
- Drowsiness
- Excessive flatulence
- General malaise

Generally workers can acclimate quickly, by knowing the symptoms and taking appropriate rest periods and drinking water frequently. HAPE is a life threatening form of non-cardiogenic pulmonary edema (fluid accumulation in the lungs). It can occur in healthy mountaineers typically above 8,200 feet. Symptoms and signs can include:

- Difficulty breathing at rest
- Cough
- Weakness or decreased exercise performance
- Chest tightness or congestion
- Crackles or wheezing in at least one lung
- Central Cyanosis (blue skin color)
- Tachypnea (rapid shallow breathing)
- Tachycardia (rapid heart rate)

The most reliable and easiest treatment is to bring the affected person to a lower elevation. Oxygen can be administered for mild or moderate cases below 12,000 feet. Other treatment options exist but should only be administered by professionals at competent medical facilities.

Cold weather conditions may also be present onsite, inviting hypothermia, frost bite, etc. Given the time of year the work is scheduled to occur during these should be a very rare occurrence. If uncontrollable shivering or discolorations of skin is observed the affected

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person should be treated warming the person through the use of warm liquids, warm blankets, and taken to immediate supervisor.

While traveling to and from the work site all posted speed limits should be obeyed . The speed limit on the site should be 15 mph unless conditions warrant slower speeds. A USFS Fire tool cache will be on site equipment will include: firewater pump, and spark arrestors on equipment.

The training documentation will be recorded on MSHA 5000-23 forms, training will be completed when the personnel are onsite.

Training will include but is not limited to:

- Documentation of equipment task training
- Documentation of PPE requirements
- Communication means from site to emergency responders (cell or sat. phone)
- Documentation of site specific worker orientation training

Suspicious molds or fungus will be tested and identified after which the proper course of action will be taken to mitigate the mold or fungus.

There is a high -likely-hood of encountering wildlife at the project site, if wildlife is encountered:

- Do not approach wild animals
- Do not feed wild animals
- Alter your route around wild animals location
- Do not block an animal's line of travel
- If an animal approaches you it is your responsibility to maintain a safe distance
- General housekeeping shall be maintained throughout the job including proper disposal of food that may attract wild animals
- Dangerous animal sightings will be reported to supervisor and others

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8.0 WATER CONTROL PLAN

Water will either be pumped or dammed and gravity flow in a pipe if required. Extra caution shall be exercised when breaching the caved area in case there is built up water behind the caved rock. All discharge water will be diverted to water retention and treatment areas as established by Environmental Restoration prior to project commencement.

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9.0 GENERAL SAFETY MEASURES

A list of other general safety measures is included and will be followed as applicable.

- No person may enter the job site without receiving site specific safety training and training on this SSHP
- Those working underground will have current MSHA Part 48 Underground Training
- Employees will travel only on designated routes
- Vehicles and equipment will be subject to safety inspections
- Drugs and alcohol are not allowed on the job site . Working at the site , alcohol impaired, is a reason for immediate termination.
- Daily Safety Meetings shall be documented, including content, meeting leader, date, and signature of all attendees
- Daily Workplace Exams, including air measurements, and Equipment Pre - Operational Checklists shall be retained on site
- Basic PPE required includes: hard hat, hi -vis (Type2 Division 2) shirt or vest, ANSI approved Z87 safety glasses, and steel or hard- toed boots
- When working underground, all persons will also have a cap lamp and a W65 Self Rescuer on their person or within 25 ft.
- Other specialty PPE as required by task such as welding hoods, respirators, hearing protection, face shields, fall harness, lanyards, thermal protection, rubber boots, etc.
- A calibrated multi -gas meter will be present at the face when personnel are working underground
- Two-way communications will be maintained to the working face and at least one person will remain outside and available to receive communication whenever personnel are underground. This person shall be capable of alerting emergency medical services
- A First Aid Kit shall be maintained on surface
- Sanitary facilities will be provided and maintained in good condition on the surface and strategically placed area(s)
- Equipment operators shall wear seatbelts if machinery is so equipped

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- Heavy equipment will have the right of way . A right -hand traffic pattern will be followed
- Wheel chocks or other means to block or park equipment against motion shall be used
- Safety equipment shall be in working condition
- Equipment shall be equipped with 10 lb. fire extinguishers and other safety features per the manufacturer and Pre -Operational Inspections shall be performed
- Personnel will take caution and prepare a pre-activity work plan for working near overhead power lines . The minimum distance to an overhead power line is 10 ft for 50Kv and 4 inches for every 10Kv above the 50Kv.
- Pneumatic airlines with threaded connections shall be locked in place or whip checks shall be used
- Equipment will be Locked Out, blocked against motion or release of energy, and tagged before maintenance work or repairs
- The work area will be equipped with an 10 lb. ABC type Fire Extinguisher.
- Fires will only be fought if safe to do so
- No work will be done on or near exposed electrical parts unless the part is de -energized and locked/tagged out.
- Work which may generate a flame, sparks, or extreme heat will be done under Hot Work Permits that include fire extinguishing equipment being present, fire watch, and appropriate PPE
- Portable toilets will be made available onsite and cleaned at regular intervals.

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10.0 ENVIRONMENTAL PROTECTION AND CONTROL PLAN

A list of general environmental protection measures is included and will be followed as applicable.

- A spill kit will be available on site
- Chemicals will be stored per manufacture's recommendations in labeled containers
- Flammables will be stored in a flammable cabinets when not in use
- Spills will be reported immediately
- Chemicals to be used on site will have a SDS on site
- Trash will be placed in designated receptacles and removed from the site at the conclusion of the project or before
- No hazardous waste is anticipated to be generated with this project
- Oily rags, residue, and oils will be disposed of in separate containers from regular trash
- Leaks will be addressed immediately if safe to do so

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11.0 HEALTH ISSUES

Dust and noise hazards:

All dust should be considered as hazardous. Dust limits visibility, damages engines and more importantly is a significant health risk (Silicosis). Therefore, all Engineering, Administrative and lastly Personal Protective Equipment, in that order, will be used

Dust Control: Whenever rock is drilled on, blasted, or mucked using load haul dump equipment, the muck will either be wet to prevent respirable silica dust, or a respirator will be worn by workers if needed. -

Heavy metal surveillance may be conducted to assure personnel are within OSHA PEL Standards.

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12.0 EMERGENCY CONTACT AND NOTIFICATIONS INFORMATION

Harrison Western Contacts

1. Project Superintendent and SSR: Robert Heeter 775.340.1776
2. Project Manager: Chris Hassel 720.312.0270
3. Project Engineer and Alternater SSR: Ben Litsey 970.980.1052
4. Project Engineer: Jacob Greenman 970.697.9611
5. Vice President/COO: Jason Buesing 303.302.2983
6. Onsite Satellite Phone: (To be determined)

Mine Rescue Contacts

(To be determined)

Environmental Restoration Contacts

1. Resident Project Representative: (To be determined))

Occupational Safety and Health Administration

1. Englewood Area Office 303.843.4500

Mine Safety and Health Administration

1. District Office - Rocky Mountain District: 303.231.5465
2. Field Office Denver Field Office: 303.231.5469
3. MSHA 24hr Hotline: 800.746.1553

San Juan County Emergency Services

1. Emergency Number: 911
2. Silverton Fire Department Dispatch Number: 970.387.5023 (24/7)
3. Non-Emergency Number: (Crested Butte Office) 970.387.5023 (24/7)

Medical Clinic

1. Silverton Medical Clinic – 970.387.5354
1450 Green Street, Silverton, CO 81433

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13.0 APPENDICES:

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APPENDIX A

Location Maps

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APPENDIX B

Standard Tunnel – Cross Section

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APPENDIX C

MINE RESCUE AGREEMENT

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APPENDIX D

SILVERTON FIRE DISTRICT AGREEMENT

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APPENDIX E

Fan Curve

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APPENDIX F

SITE FACILITIES MAP

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APPENDIX G

SDS SHEETS MAY BE ADDED AS ADDITIONAL MATERIALS ARE IDENTIFIED

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